METHOD FOR PRODUCING A FLAT INTERFACE FOR A METAL-SILICON CONTACT BARRIER FILM

ABSTRACT

Sub A2

A method for forming a conductive contact having an atomically flat interface. A layer containing titanium and one of cobalt, tungsten, tantalum, or molybdenum is deposited on a silicon substrate and the resulting structure is annealed in a nitrogen-containing atmosphere at about 500°C to about 700°C. A conductive material is deposited on top of the structure formed on anneal. A flat interface is formed that prevents diffusion of conductive materials into the underlying silicon substrate. The method can be used to form contacts for very small devices and shallow junctions, such as are required for ULSI shallow junctions.